



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/623,651	07/22/2003	Naoki Kubo	0378-0400P	4744
2292	7590	07/11/2008	EXAMINER	
BIRCH STEWART KOLASCH & BIRCH			TRAN, NHAN T	
PO BOX 747			ART UNIT	PAPER NUMBER
FALLS CHURCH, VA 22040-0747			2622	
NOTIFICATION DATE	DELIVERY MODE			
07/11/2008	ELECTRONIC			

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

mailroom@bskb.com

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	10/623,651	KUBO, NAOKI	
	<b>Examiner</b>	<b>Art Unit</b>	
	NHAN T. TRAN	2622	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

1) Responsive to communication(s) filed on 10 April 2008.

2a) This action is **FINAL**.                            2b) This action is non-final.

3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

4) Claim(s) 1-11 is/are pending in the application.

4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.

5) Claim(s) \_\_\_\_\_ is/are allowed.

6) Claim(s) 1-10 is/are rejected.

7) Claim(s) 11 is/are objected to.

8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

9) The specification is objected to by the Examiner.

10) The drawing(s) filed on \_\_\_\_\_ is/are: a) accepted or b) objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a) All    b) Some \* c) None of:

1. Certified copies of the priority documents have been received.
2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

1) Notice of References Cited (PTO-892)

2) Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_.

4) Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.

5) Notice of Informal Patent Application

6) Other: \_\_\_\_\_.

## DETAILED ACTION

### ***Response to Arguments***

1. Applicant's arguments with respect to claims 7-10 have been considered but are moot in view of the new ground of rejection.
2. The Examiner notes that, by the Applicant's arguments, the independent claim 1 is generic to all embodiments. Therefore, new interpretation of all claims has been applied and the allowability of claims 1-6 has been withdrawn.

### ***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.
4. Claims 1-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Harada Koichi (JP 9205589) in view of Yamashita et al. (US 6,750,437) and in further view of Ochi (US 4,558,365).

Regarding claim 7, Koichi discloses a solid-state image pickup apparatus (Fig. 1 and abstract) comprising:

a plurality of photo-sensors (pixels 1) arranged in a direction of row and a direction of column (Fig. 1), each of said plurality of photo-sensors corresponding to a particular pixel included in an imaging frame, each of said plurality of photo-sensors comprising a first photosensitive cell (12b) having first sensitivity for photoelectrically transducing incident light to generate a signal charge and a second photosensitive cell (12a) having second sensitivity lower than the first sensitivity for photoelectrically transducing incident light to generate a signal charge (see Fig. 2; abstract and [0011]-[0012]);

said first photosensitive cell and said second photosensitive cell of each of said plurality of photo-sensors being positioned closer to a center and an edge of the imaging frame, respectively (see Fig. 2, wherein the first cell 12b is positioned closer to the center while the second cell 12a is positioned closer to an edge of the sensor frame).

Koichi does not explicitly disclose a corrector executing shading correction on a first image signal derived from said first photosensitive cell and on a second image signal derived from said second photosensitive cell; said corrector correcting the first image signal and the second image signal in accordance with a shading characteristic common to said first photosensitive cell and said second photosensitive cell.

Yamashita teaches a shading corrector that executes shading correction in accordance with a shading characteristic common to a first photosensitive cell (301) and second photosensitive cell (302) of a pixel (Fig. 6), in which the image signal produced by the first photosensitive cell and the image signal produced by the second

photosensitive cell are *added prior to the common shading correction* (see col. 6, lines 49-56 and col. 13, lines 1-2).

Therefore, it would have been obvious to one of ordinary skill in the art to modify the imaging apparatus in Koichi to implement shading corrector that would execute shading correction on a first image signal derived from said first photosensitive cell and on a second image signal derived from said second photosensitive cell in accordance with a shading characteristic common to said first photosensitive cell and said second photosensitive cell for image enhancement.

Koichi and Yamashita do not disclose that each of said plurality of photo-sensors is shifted from adjoining photo-sensor by a distance corresponding to a single photo-sensor in the direction of row and the direction of column.

However, Ochi teaches an image sensor having each of pixels being shifted from adjoining one of a plurality of pixels by a distance substantially corresponding to a single pixel in the direction of row and column (Figs. 3 & 4) so that the image sensor with high resolution and high sensitivity is realized (see Ochi, col. 2, lines 26-31).

Therefore, it would have been obvious to one of ordinary skill in the art to further reconfigure the image pickup apparatus in Koichi and Yamashita by shifting each pixel from the adjoining pixels by a distance substantially corresponding to a single pixel in the direction of row and column as taught by Ochi so as to improve resolution and sensitivity of the image pickup apparatus.

Regarding claims 1, 5, 8 & 9, these claims are also met by the analysis of claim 7. It should be noted that the shading characteristics of the first and second photosensitive cells are not necessarily different from each other (not specified in the claims) and are thus considered the same. The first image signal and second image signal are added and then subjected to the shading correction using a common shading characteristic to both photosensitive cells of the pixel as discussed in claim 7 above.

Regarding claim 2, this claim is also met by the analysis of claim 7. Since claim 2 does not require the first shading data and second shading data are different from each other, the common data to both photosensitive cells has met the claimed limitations.

Regarding claims 3 & 4, Koichi, Yamashita and Oichi also disclose that each of said plurality of photo- sensors is arranged at a fixed pitch in the direction of row and the direction of column in a substantially square matrix (see Fig. 16 of Kochi or Figs. 1 & 2A of Ochi).

Regarding claim 6, this claim is also met by the analysis of claim 7.

Regarding claim 10, as discussed in claim 7, the first image signal and the second image signal are added (mixed) to produce a third image signal, wherein said

corrector corrects the third image signal in accordance with a shading characteristic common to the first photosensitive cell and the second photosensitive cell.

***Allowable Subject Matter***

5. Claim 11 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to NHAN T. TRAN whose telephone number is (571)272-7371. The examiner can normally be reached on Monday - Friday, 8:00am - 4:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Sinh Tran can be reached on (571) 272-7564. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Nhan T. Tran/  
Primary Examiner, Art Unit 2622